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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/559,582	05/09/2006	James Andrew Chaundler	920602-100848	2720

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EXAMINER	
SCRUGGS, ROBERT J	
ART UNIT	**PAPER NUMBER**
3723	

NOTIFICATION DATE	DELIVERY MODE
04/09/2008	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patent-ch@btlaw.com

Office Action Summary	Application No.	Applicant(s)	
	10/559,582	CHAUNDLER ET AL.	
	Examiner	Art Unit	
	ROBERT SCRUGGS	3723	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 January 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-12* is/are pending in the application.

4a) Of the above claim(s) *none* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-12* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on January 28, 2008 has been entered.

Claim Rejections - 35 USC § 103

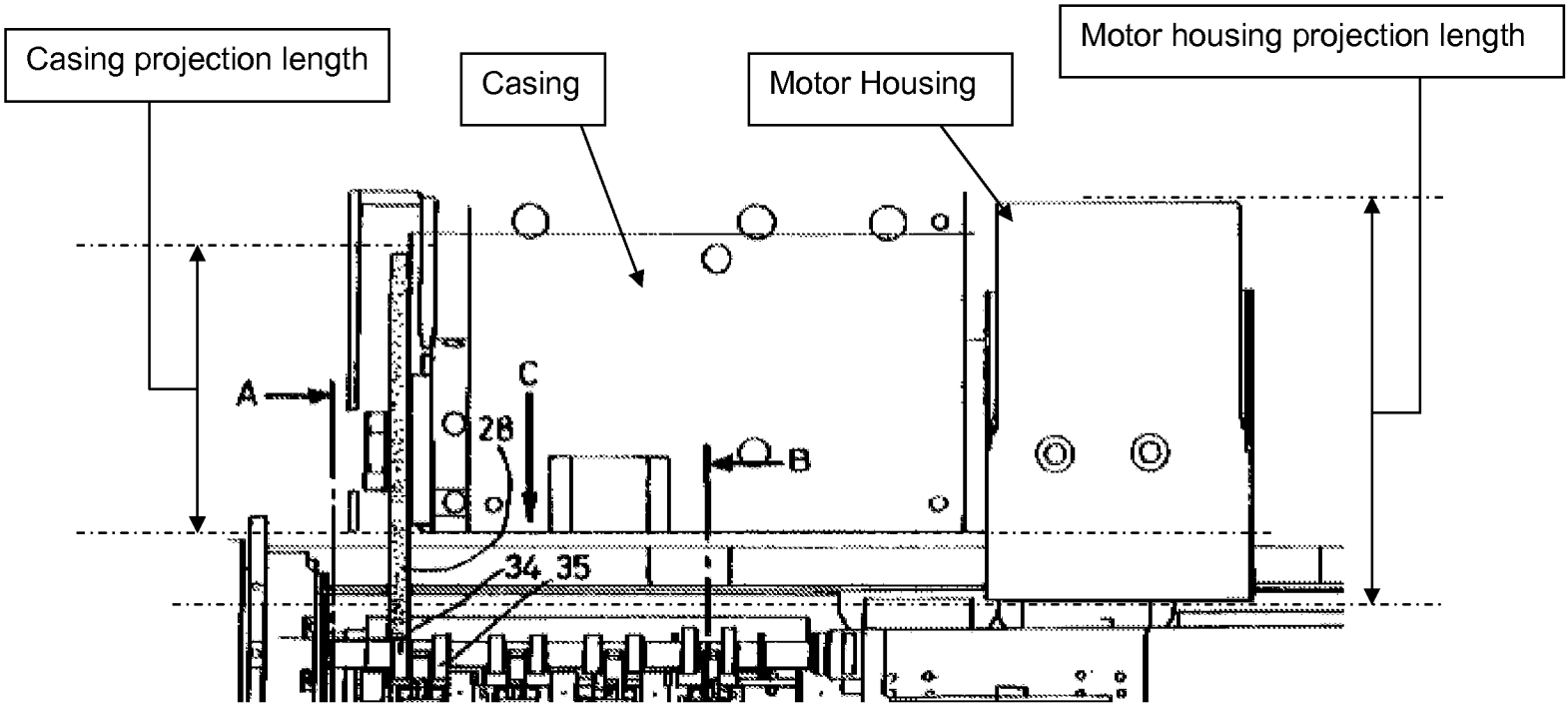
2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-10 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pflager et al. (5443413) in view of Suzuki (previously cited) and Laycock et al. (6485353).

In reference to claim 1, Pflager discloses an apparatus for grinding cams comprising, a spindle (Figure 1) including a shaft (5) that has a grinding wheel (18) mounted at one end, a rigid elongated casing (1) extending axially from drive means formed as an electric motor (40), the shaft being carried by two hydrostatic bearings (64 and 65), wherein one of the hydrostatic bearings (64) being formed at a location near said one end of the shaft so as to be at a remote

end from the motor and depending upon the length of the workpiece selected by a user, the shaft and the casing could inherently extend to at least the length of the workpiece depending on the size of workpiece selected, but lacks, two hydrostatic bearings disposed on opposite sides of the motor and having the casing project to a lesser extent than the motor housing towards the location where a camshaft is mounted in use of the grinding machine to facilitate the use of a smaller diameter grinding wheel. However, Suzuki teaches a technique of providing hydrostatic bearings (9) on opposite ends of a motor (5) for a spindle (1) device (Figure 1 and see abstract). One of ordinary skill in the art could have applied the known technique of providing hydrostatic bearings on opposite ends of a motor, as taught by Suzuki, in the same way to the device, of Pflager et al., and the results would have been predictable in that the spindle would have improved dynamic stiffness and high rotation accuracy. In addition, Laycock et al. disclose a casing (30) that projects to a lesser extent than the motor housing (32) towards the location where a camshaft is mounted in use of the grinding machine (see figure below). One of ordinary skill in the art could have substituted the casing, of Pflager et al., for the known casing that projects to a lesser extent than the motor housing towards the location where a camshaft is mounted in use of the grinding machine, in view of Laycock et al., and the results would have been predictable in that smaller grinding wheels could be selected for use in the device because more space is available between the casing and the workpiece.



In reference to claim 2, Pflager shows that a bearing (65) can be placed at the inner end of the of the shaft, which is external to a motor housing that includes a stator (14) and a rotor (13) and Suzuki teaches that a third bearing could be placed within the motor housing at the other end of the shaft opposite to the inboard end.

In reference to claim 3, Pflager also discloses a stator (14) is secured within a rigid motor housing (2) and when Pflager is taken in view of Suzuki, they teach that all the bearings could be secured within the rigid elongated casing or the rigid motor housing.

In reference to claim 4, Pflager also shows that the external part of the shaft is longer than the axial length of the rotor member (see figure 1) therefore since Pflager in view of Suzuki disclose the same structure of the shaft as claimed by the applicant, the stiffness and the support of the shorter part of the shaft situated between the second and third bearings would dictate that the first bending resonant frequency of the longer external part is above the rotational frequency.

In reference to claim 5, Pflager also shows a symmetrical design for the housing (2), which can be seen in figure 1.

In reference to claim 6, Pflager also discloses a water-cooling jacket (21) which forces water to follow a helical path around the motor.

In reference to claim 7, Suzuki also teaches of forming a spindle that is axisymmetrical which can be seen in figure 1.

In reference to claim 8, Pflager also discloses that oil is supplied to the bearing under pressure by a pump (28, 29), which draws oil from a reservoir (20).

In reference to claims 9 and 10, Pflager also discloses that a lower region (4) is formed as a collection box, which is used for draining heated oil.

In reference to claim 12, Pflager in view of Suzuki disclose the claimed invention, therefore since the method is inherently suggested by the structure, the device formed by the combination of Pflager and Suzuki would inherently be able to perform aligning of the bearings as claimed in claim 12.

4. Claim 11, is rejected under 35 U.S.C. 103(a) as being unpatentable over Pflager et al. (5443413) in view of Suzuki (previously cited), Laycock et al. (6485353) and Lundin et al (5103701). Pflager discloses the claimed invention previously mentioned above, but lacks, a thermal barrier. However, Lundin et al. teaches of using a thermal barrier (22) for a machine tool (Column 3, Lines 52-63). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the lower region, of Pflager, with a thermal barrier, in view of Lundin et al., in order to prevent undesired transfer of heat.

Response to Arguments

5. Applicant's arguments filed December 19, 2007 have been fully considered but they are not persuasive.

6. Applicant contends that, **"In relation to difference (1), it can be seen that the spindle of Pflager is supported by two hydrostatic bearings disposed to one side of the drive motor. The spindle of claim 1 is supported by a further hydrostatic bearing is disposed on the opposite side of the motor. It is asserted by the examiner that the inclusion of this additional bearing would have been obvious in view of Suzuki. It is to be**

noted that Suzuki relates to a "spindle device", without specific reference in the abstract to use of such device in a grinding machine. As submitted previously, it was known prior to the present invention to provide two bearings on one side of a motor to support a grinding wheel spindle. However, provision of a grinding wheel spindle with three bearings had not previously been contemplated due to the belief in the field that over-constraints of the shaft will occur, leading to bearing overload. Accordingly, provision of three bearings as in the claimed invention was a radical step. Combination of the disclosure of Pflager with the generic spindle device of Suzuki would not have been a natural one to make on the basis of "knowledge which was within the level of ordinary skill at the time the claimed invention was made".”

a. However, the examiner respectfully disagrees with these statements. Initially, Suzuki teaches a technique of providing hydrostatic bearings on opposite ends of a motor in a spindle device. The fact that Suzuki does not disclose that the spindle device is used in a grinding machine is moot because the technique still teaches of providing bearings on opposite ends of a motor in a spindle device therefore one of ordinary skill working with spindles having bearings and a motor could have looked to the teaching, of Suzuki, for providing bearings on opposite ends of the motor in order to provide the predictable results of having a spindle with improved dynamic stiffness and high rotational accuracy. Also, with respect to the device having a radical step in providing three bearings is

also not persuasive because the combination (previously mentioned above) clearly and obviously discloses the same device without the need for radical improvement. Improving the stiffness and rotational accuracy is something one of ordinary skill in the art would try and solve when working with bearings in spindle devices and when the combination is made, the stiffness and rotational accuracy is increased therefore the examiner believes the rejection is proper and thus maintained.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Metzler et al. (6390907) also shows a spindle casing (134) projecting to a lesser extent than the motor housing (130) towards the location where a camshaft is mounted in use of the grinding machine.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ROBERT SCRUGGS whose telephone number is (571)272-8682. The examiner can normally be reached on Monday-Thursday, 7:30-6.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph Hail can be reached on 571-272-4485. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

RS

/Joseph J. Hail, III/
Supervisory Patent Examiner, Art Unit 3723